

# **Pennsylvania Department Of Agriculture**

**Final Performance Report**

**Specialty Crop Block Grant  
Program**

**12-25-G-0614**

**October, 2007- January 31, 2010**

April, 2010

## **Project #1**

### **Project Title:**

Bringing Vitamin D Mushrooms to Market

### **Project Summary:**

A research project was developed to determine dosage and exposure levels of UV light to increase the Vitamin D content in mushrooms, specifically those methods needed to optimize pulsed UV light treatment to produce significant amounts of Vitamin D in mushrooms after short exposure times and to study the potential factors influencing the amount of Vitamin D produced. A dose/response study was also conducted to determine if generation of Vitamin D would reach a maximum level at some point. The effects of this process on the shelf life of fresh mushrooms and their quality attributes were evaluated. The retention of the Vitamin D produced by this process during postharvest storage was also determined.

Researchers presented their findings to the mushroom industry at the Penn State Mushroom Industry Conference meeting held September 20-22, 2009. The final report on Vitamin D research conducted by Penn State was presented. In addition, Xenon Corporation gave a presentation on the pulsed UV light method used in the Penn State research. Over 200 people attended the Penn State Mushroom Industry Conference.

AMI has also coordinated with its mushroom industry partners in analyzing the regulatory aspects involved with UV exposure to mushrooms and assisted with consultants who conducted a substantial equivalency study. Their report concluded that, apart from the increased Vitamin D level, mushrooms exposed to UV light show no other significant compositional changes. Various meetings have been held throughout the year to discuss the progress of these efforts and gather grower input.

<u>Meeting Date</u>	<u>Attendees</u>	<u>Purpose of the Meeting</u>
October, 2008	conference call with ~25 participants from AMI Board, Mushroom Council and consultants	To discuss literature review of Vitamin D treatments
December, 2008	Conference call with 15 participants	To discuss FDA regulatory issues
February, 2009	Conference call with AMI research committee members, Board, four Penn State administrators	To discuss on-going research project, patent and licensing issue
March, 2009	Industry meeting of approximately 30 mushroom packers/shippers	To provide an update on the research effort and regulatory issues.
May, 2009	Meeting with Cantox (a regulatory consultant), Xenon (UV light manufacturer) and approx. 30 grower/shippers attending	To discuss on-going research project, FDA regulatory issues.

	the North American Mushroom Conference	
June, 2009	Presentation by Penn State researcher at the AMI Research Committee meeting with approx. 40 participants	To provide an update on PSU research project, initial findings
August, 2009	Meeting with Penn State administrators, technology transfer staff and approx. 20 leaders of the PA mushroom industry	To discuss patent and licensing issue.
September, 2009	Presentation at the Penn State Mushroom Conference by Penn State researchers. Approx. 200 attendees	To present final report on research project.
January, 2010	Conference call with approx. 50 industry members	To review legal issues arising from patent filing and licensing agreement.

### **Project Approach:**

AMI provided coordination with the industry, the Penn State researchers, the Mushroom Council, Xenon, and other interested parties to develop the parameters of the research project and to communicate its progress and outcome through conference calls and meetings. As issues arose from patent filings, AMI managed the discussions between interested parties and Penn State.

### **Project Goals and Outcomes Achieved:**

It was anticipated that this project would lead to a work plan for bringing Vitamin D rich mushrooms to market from two perspectives – the technical application and the regulatory requirements. It was successful in coordinating the necessary research to determine the dosage and exposure levels of UV light necessary to achieve Vitamin D rich mushrooms. The legal and regulatory aspects of this process were also explored, but have not yet been definitively determined.

In the research project, both white and brown button mushrooms, sliced and whole, were treated for one second. It was determined that sliced mushrooms produce significantly more Vitamin D than whole. White button mushrooms produced slightly more Vitamin D than browns but differences were not statistically significant. The results indicate that with increasing exposure to pulsed UV light, the Vitamin D content increased dramatically, but after four seconds of exposure the Vitamin D produced leveled off. The shelf life and quality attributes of the treated mushrooms were not adversely affected. After three days in cold storage the Vitamin D content of mushrooms treated for one second decreased and then remained steady for eight days.

Untreated samples contained low levels of naturally occurring Vitamin D (0.80% DV/serving in brown mushrooms and 1.66% DV in white buttons). Under various scenarios, as outlined in the research report, Vitamin D content on a % DV/serving increased from a range of 300% to 692% (Figures 1 & 2, summarized in Table 1).

**Beneficiaries:**

There are 73 mushroom farms in Pennsylvania that supply an estimated 35 packinghouses which could use this technology. The research findings are publicly available. The potential to market Vitamin D rich mushrooms would strengthen the industry by adding value with a higher nutritional profile, resulting in greater demand for fresh mushrooms.

**Lessons Learned:**

Patent applications have been filed by several parties addressing the use of UV light on mushrooms. The potential legal and licensing issues associated with these patents, as well as the current uncertainty of the regulatory situation, have resulted in delaying a pilot program to develop a protocol for practical application in a packing house.

**Contact Person:**

Laura Phelps  
AMI

1 Massachusetts Ave NW  
Washington, DC 20001  
202-842-4344

Sara Manning  
AMI

1284 Gap Newport Pike  
Avondale, PA 19311  
610-268-7483

**Attachments: (appendix A)**

“Post-harvest Vitamin D Enrichment of Fresh Mushroom”

Authors: Robert Beelman and Michael Kalaras  
Department of Food Science  
Penn State University

**Project Title:**

Food Safety in the Mushroom Industry (MGAP)

**Project Summary:**

The Mushroom Good Agricultural Practices (MGAP) Program was finalized and delivered to the Pennsylvania mushroom farm community in a variety of formats. Following the introduction of the MGAP program in December 2008, USDA auditors were trained in the program and the first audit was conducted in December 2008.

**Project Approach:**

Industry-wide consensus was reached on the components of good agricultural practices program for mushroom production, based on identifiable risks and control measures in mushroom production. Guidance was provided by food safety consultants, academics and government officials.

A farm was selected as a pilot test to evaluate the practical implementation of the program at a small to medium sized farm. Various industry experts and consultants assisted with setting up the food safety program at the farm, which received a perfect score on its MGAP audit in August 2009. Various modifications were made to the program and the lessons learned while setting up the program were included in training sessions.

In April 2009, three training sessions were held for growers and others involved in the industry outlining how to implement a MGAP program on a mushroom farm. Handbooks were prepared outlining each of the MGAP standards, the guidelines on how to put the standards into practice, and the necessary paperwork required for documentation. Additional information on standard operating procedures and sanitation procedures was also developed and provided.

A follow up training session was held in June for growers to share their experiences with both MGAP implementation and USDA audits. Suppliers of products and services to the mushroom industry also participated in all training sessions, widening the impact of the mushroom food safety initiative. The four meetings took place: April 1, 15, 29 and June 3, 2009.

The information derived during the follow up training session with regards to the MGAP implementation and USDA audits is as follows:

Key challenges included from MGAP:

- Amount of paperwork
- Enforcement of food safety rules for harvesters
- Logistics with basket transfers from packers
- Worker training – time required
- Need for more Spanish language materials and training
- Need for clarification in some MGAP guidelines

## USDA audits

- Costs
- Subjectivity and variation between individual auditors
- Need for clarification in audit checklist questions
- Need for updates due to changes in farming practices

All information developed and provided during the training sessions is available on a website developed specifically for the MGAP program – [www.mgap.org](http://www.mgap.org).

A database of growers and employees responsible for their farms' MGAP programs was developed. The list has grown to over 180 contacts in Pennsylvania. Updates are provided via email messages, fax, phone and mail.

## **Project Goals and Outcomes Achieved:**

The overall goal of this project was to help ensure that mushrooms continue to be a safe food product. Project specific goals included the following:

**Mushroom Good Agricultural Practices:** To provide the industry with a comprehensive, user-friendly (MGAP) audit that is universally accepted by customers, researchers and regulatory officials. The AMI Task Force, AMI staff and PSU staff worked with USDA auditors and private sector audits in the development of the audit. A training session with farm tours was hosted for auditors. AMI coordinated contact information from USDA and other auditors to growers.

**Training sessions:** To deliver key, consistent food safety messages efficiently and effectively. AMI hosted three training sessions and one follow up session outlining how to implement the MGAP program and prepare for an audit. We focused on “teaching to the test” by explaining each of the MGAP standards, the guidelines, the forms necessary for that standard and the audit questions for that standard. A significant part of the training included question and answer sessions. Presenters included food safety consultants, growers and Penn State faculty.

**Development and preparation of additional food safety materials:** To provide the necessary educational tools to implement, supplement and reinforce food safety messages and programs. All materials – the MGAP standards and guidelines, form, templates, checklists, schedules and logs necessary for documentation, and the MGAP audit checklist – were provided at the training sessions, distributed to growers who could not attend and posted on the website. Versions were available in English and Spanish.

**Food safety website:** To provide an easily accessible, central resource for the latest food safety materials, news and information. All documents necessary for MGAP implementation are available at [www.mgap.org](http://www.mgap.org) as well as meeting announcements, food safety news and updated list of farms that have completed audits. Additional mushroom food safety information is available at [www.americanmushroom.org](http://www.americanmushroom.org)

All of these goals were achieved. The MGAP audit is the only nationwide, commodity specific audit that has been adopted by the U.S. Department of Agriculture. As noted below, the majority of the mushroom farms in Pennsylvania have passed an MGAP audit, and thousands of employees have received training. We estimate that approximately 135 individuals representing 76 farms and mushroom-related businesses attended the four training sessions held in 2009 in Pennsylvania. In December 2008, two sessions were held on the Mushroom Food Safety Training Kit for employees. In all of these sessions, the goal is for attendees to take the knowledge they have gained back to their farms to their employees. Through this train-the-trainer approach, thousands of employees have been educated in food safety practices.

Over 40 PA farms have successfully passed a MGAP audit. One of the audit checklist questions is “Have your employees received food safety training?” We estimate that these 40 farms employ over 1,500 employees. In addition, there are dozens of farms that are still working toward completing a MGAP audits, but have trained their employees. In addition, there are many mushroom-related businesses which have employees who do contract work at mushroom farms who have also received food safety training. MGAP has also provided an economic benefit to farms by delivering the framework of a proven food safety program at no charge and reducing the need for multiple, generic audits.

### **Beneficiaries:**

As of December 2009, over 40 mushroom farms in PA had successfully implemented MGAP programs as evidenced by passing MGAP audits. All mushroom farms in Pennsylvania received the training materials and have access to the materials on [www.mgap.org](http://www.mgap.org). At the four training sessions approximately 135 individuals (over 75 percent of attendees participated in all four meetings), representing 76 farms and mushroom-related businesses, were able to take the MGAP program back to their own farms where it has been shared with literally thousands of employees.

### **Lessons Learned:**

Growers were eager to participate in the training and implement the MGAPs on their farms. Of utmost importance was providing them with the tools they needed – including forms, templates, and checklists so they could focus on implementing the requirements and documenting their actions rather than designing the paperwork.

All materials must be available on the Internet and in a user-friendly form. Forms must be in formats that allow customization by the individual farms. Interaction with other growers is also invaluable in finding the best ways to achieve the goals of a food safety program.

**Contact Persons:**

Laura Phelps  
AMI

1 Massachusetts Ave NW  
Washington, DC 20001  
202-842-4344

Sara Manning  
AMI

1284 Gap Newport Pike  
Avondale, PA 19311  
610-268-7483

**Attachments: (Appendix B)**

*Mushroom News Reports*

**Project #2****Project Title:**

Good Agricultural Practices and Good Handling Practices (GAP/GHP) Cost Sharing Program

**Project Summary:**

The cost share program was conceived based on the market place need for a third party certification, audit program being introduced by USDA. This program provides an incentive to early adopters. It lessens the real and perceived burden being placed on the grower to adopt additional regulation into their business. Within agriculture there are several examples both at a state and federal level. Federally, cost sharing is used in programs like the USDA NOP organic cost-share program, USDA NRCS EQIP and various other conservation program, not to mention numerous crop, product based subsidy programs that can be likened to a cost-share. The match is one for one for dollars spent over \$400 in regards to the audit; the state department's food safety auditors provide in-kind contributions to the program. The GAP/GHP cost share program simply used a proven model within the agriculture community.

Provide cost sharing support for successfully completed USDA Good Agricultural Practices (GAP) or USDA Good Handling Practices (GHP) audit annually. The program provides a maximum reimbursement of \$400 towards one successfully completed audit per year. Each audit is to some degree individualized to the operation and is affected by the level of preparation and knowledge on the part of the group being audited and the skill of the auditor. The arithmetic average audit cost was \$442.54 in 2008 and \$561.37 in 2009 for an average over both years of \$501.96.

**Project Approach:**

The program is administered by the Pennsylvania Department of Agriculture through applications made available on its website ([PDA GAP/GHP Cost Share Program](#)) and through paper applications made available upon request, by auditors and at various trade shows.

Promotion was done on several levels. Applications were made available at trade events specific to specialty crop producers such as the Mid-Atlantic Fruit and Vegetable Growers annual meeting. Applications were announced and reminders were published in paper and electronic releases from the PA Department of Agriculture. Industry members such as Rice Fruits and The Mushroom Growers association were active in disseminating applications and promoting the program on behalf of the department. Applications were available on the PA Department of Agriculture website. Also, auditors were instrumental in both promoting the program and disseminating applications to businesses they audited. In summary, nearly 4,000 producers/growers have received GAP cost share program information through educational meetings. Of that number 121 producers have received reimbursement checks, thus far.

Applications were accepted throughout the year during both years of the program. However, there was a deadline of January 15 for applications relative to audits that occurred in the previous calendar year with the hope that even those audited near the end of the calendar year would have ample time to submit applications. All accommodations were made to process applications that arrived at the Department.

The maximum cost share amount was by an advisory board that included stakeholders (fruit, vegetable and mushroom grower associations) and representatives from individual producers, industry trade groups and Department employees. The methodology for establishing the maximum amount to be reimbursed was determined by estimating what a GAP/GHP might cost. Realizing that this was a new program; the group based their decision information learned from auditors in the Bureau of Food Safety. The board recommended to set the cost share amount at a maximum of \$400 to maintain a good return for producers and ensure funds would be available for the maximum amount participants.

The cost-share program was designed to provide \$400 with the understanding from industry and state representatives that this amount would cover most of the cost in a majority of the cases and all of the cost in some the rest of applications. The rationale was that producers or processors would have an incentive to be prepared for the audits as level of preparation directly affects how long the audit takes and in turn the ultimate cost of the audit. The end result was an average reimbursement over the two years of the program of 77 percent which is on par with 75% cap in the USDA organic cost share program which is the most comparable program.

The funds were made available to any business that successfully completed a USDA GAP or GHP audit. The limit was one reimbursement per business per calendar year.

At the time the grant was written, less than 20 producers in Pennsylvania were participating in the voluntary GAP/GHP audit program. There were 40 participants in the first year of the program and 81 participants in year two.

The advisory group, which included stakeholders from fruit, vegetable and mushroom growers associations assembled to address the cost share program recommended to set the cost share amount at a maximum of \$400 to maintain a good return for producers and ensure funds would be available for the maximum amount participants.

### **Project Goals and Outcomes Achieved:**

The first goal of the program was to encourage more specialty crop producers to participate in Pennsylvania's GAP/GHP Audit Verification Program by reimbursing some of the audit costs. The program was successful in reaching producers and providing reimbursements that averaged 84 percent of costs in 2008 and 70 percent of costs in 2009.

The change in percent reimbursement is directly a result of increased average audit costs as the program maintained the \$400 reimbursement level both years. The program did see a 102.5 percent increase in participation from year one to year two, far exceeding the outcome objective of a 10 percent increase. The average audit cost was \$442.54 in 2008 and \$561.37 in 2009 for an average over both years of \$501.96. This was calculated based on applications received which required the applicant to provide documentation detailing their audit costs. Outreach efforts by Department staff, efforts of auditors, industry, and producers in general made sure awareness of the cost-share program was as wide spread as possible. Anecdotally, we hear that the user-friendliness of the application process was helpful in encouraging participation. Ultimately however, we need producers and processors voluntarily submitting to the audit process. The Increased numbers of completed audits coupled with ongoing outreach will drive increased applications for the cost share program.

The second goal, to assure consumers that PA producers of specialty crops have taken all reasonable measures to ensure product safety can also be summed up in the increased participation year over year in the program and by the growth of producers applying for these voluntary audits which are seeing increased consumer and industry approval.

### **Program Outcomes:**

Providing funding will encourage more specialty crop producers to implement Pennsylvania's GAP/GHP Audit Verification Program. Since this program is currently only voluntary, helping to reduce some of the costs associated with the audit verification process will hopefully entice more producers to take advantage of this excellent program. As consumers continue to pressure farmers to verify the safety of their product, hopefully more specialty crop producers will see value in this proposed cost-sharing program.

When the grant was written, the following two measurable outcomes were outlined in the application:

1. Participation in the cost-sharing program is expected to include 40 specialty crop producers in 2008
2. A 10 percent increase in participation is expected each year after 2008-- for the next three years.

The first outcome was met exactly with 40 participants in 2008, year one of the program. The second outcome was exceeded with 81 participants in 2009 (a 102.5 percent increase).

### **Beneficiaries:**

The primary beneficiaries are the GAP audited producers who have documentation of their commitment to on the farm food safety best practices being used. This will enable them to meet food safety requirements for gaining access to additional marketing channels. The secondary beneficiary is the consumer or wholesale buyer. They have an increased confidence in the 'on the farm' food safety practices to ensure the least risk to microbial contaminants from their food source. See attachment (Appendix C) for producers and monetary values.

### **Lessons Learned:**

- Outreach is critical, especially partnerships with specialty crops related organizations such as fruit growers and mushroom growers.
- Clear, easy to understand applications for reimbursement are key to participation.
- Additional funding is needed to meet anticipated growth of the program that far exceeded initial growth projects in future rounds of the specialty crops block grant assuming this project is refunded.

### **Contact Person:**

Jared Grissinger  
Pennsylvania Department of Agriculture  
2301 North Cameron Street,  
Harrisburg, PA 17110  
717-705-9513  
[jgrissinger@state.pa.us](mailto:jgrissinger@state.pa.us)

### **Attachments: (Appendix C)**

GAP/GHP

### **Project # 3**

#### **Project title:**

Integrated Pest Management Program (IPM)

#### **Project Summary:**

Integrated Pest Management (IPM) has become an important tool throughout the agricultural industry, including vegetable production. However, many producers have not adopted these practices and do not recognize the many benefits of an IPM program. This project is supporting IPM demonstration for Lancaster County growers. The study focuses on Amish and Mennonite vegetable producers, and staff members with the PA IPM Program providing IPM and bio-control training to a specified group of growers. A second group of growers serve as a control group. Data collection will include crop yield and quality differences as well as changes in the growers' knowledge, attitude, and practices. Results of this study will then be used to improve a field guide and encourage others to implement IPM practices.

#### **Project Approach:**

The initial phase of the project began by creating and administering a survey to vegetable growers in Lancaster County. The survey was created to assess growers' farming background, current pest control program, and perceptions of Integrated Pest Management (IPM) and organic agriculture. On January 2<sup>nd</sup> and 3<sup>rd</sup>, 2008, the survey was administered by Wade Esbenshade, IPM Specialist PSU Dept. of Entomology, to sixty-nine growers at two produce auction meetings in Eastern Lancaster County.

Through weekly, on-farm personal field training sessions with an IPM/sustainable agriculture specialist and educational workshops, eight growers learned pest identification, pest life cycles, and techniques of a biologically-based IPM approach. Growers created a more natural and sustainable pest management system as they learned to effectively use scouting and record keeping; crop rotation; sanitation; cultural, mechanical, and biological controls; and bio-rational and reduced-risk pesticides.

In 2008 and 2009, two groups of four growers who showed a strong interest and desire to change their current conventional production practices to ones based on IPM and bio-control methods were selected to participate in the project. Another group of four growers who planned on continuing their current conventional practices was selected to serve as the "control" group.

Weekly on-farm visits to participating growers were made by Wade Esbenshade, to educate growers on a wide range of IPM techniques. Wade helped to explain pest life cycles in order to help participants become aware of when each pest is most likely to become a problem on their farm. Wade also kept growers up to date on local pest trapping results performed on several participating farms as well as showed growers how to access the PA IPM pest monitoring information.

Growers learned how to track local pest problems and use control methods only when thresholds had been reached. This led to most participants having better timing with their pesticides and an overall reduction in pesticide usage.

The pest control benefits of native beneficial organisms were explained to growers. Growers learned about the detrimental effects of high-risk pesticides on beneficial organisms and how beneficial organisms can contribute to pest control. Information on identifying and conserving native beneficial insects was given to project participants. Several growers were amazed at the number of natural predators that were found in their fields when high-risk pesticides were not used. Some growers chose not to spray in order to allow the beneficial insects to control the pests.

### **Outcomes Achieved:**

The initial phase of the project began by creating and administering a survey to vegetable growers in Lancaster County. Some of the highlights of the information gathered from this survey are the following:

- Only 46% of growers are planting cover crops.
- Less than 74% of growers are rotating crops.
- Only 78% of growers are deliberately scouting their crops for pests.
- Of those growers deliberately scouting, only 22% are determining pest thresholds.
- No growers are using pheromone trapping for lepidopteron pests.
- No growers are planting trap crops.
- Only 7% of growers are using biological controls.
- This lack of scouting and determining thresholds has led to 68% of growers spraying on a daily or weekly schedule.
- 75% of growers are applying some type of a restricted-use insecticide.
- 67% of growers only talk to their Cooperative Extension Educator once a season or not at all.
- Only 12% of growers talk to their Extension Educator more frequently than once a month.
- 62% of growers are highly to somewhat interested in introducing an IPM program to their farm with an additional 10% of growers being interested in transitioning to organic.

The average acreage of vegetables produced on participating farms was twenty acres, with the smallest farm comprising of five acres and the largest comprising of approximately forty acres. Participants grew a variety of vegetable crops with the largest acreage being planted to sweet corn, tomatoes, or cucurbits (cantaloupes, watermelons, and pumpkins). Other crops such as cucumbers, eggplant, peppers, potatoes, and cold crops were also grown by participants.

Information on pest levels, pest crop damage, and control success was gathered throughout the growing season. Pesticide usage information detailing type, quantity, and frequency was gathered from participants.

Unfortunately, not all growers had complete pesticide records. In these cases, general pesticide usage information was gathered. Yield data was determined to not be a reliable indicator of pest control in this project due to numerous outside management factors such as soil fertility and moisture, which can greatly impact crop yield.

Data showed that equal or greater control of insect pests with an equally low amount of crop damage can be achieved with an IPM program on most crops. The only crop which was discovered to be a challenge to achieve equal control of insect pests was sweet corn. Satisfactory control was achieved in most cases, however slightly more crop damage did occur when high-risk pesticides were eliminated. Growers selling directly to consumers did not have a problem selling this corn, on the other hand, buyers at local produce auctions do not allow for any crop damage from caterpillar pests. More work in controlling sweet corn pests without high-risk pesticides as well as more consumer education in the value of crops produced without high-risk pesticides is needed.

On average, growers in the “IPM” group were able to eliminate one to two pesticide applications per crop and were able to eliminate all restricted-use pesticides and FQPA priority pesticides (e.g. organophosphates, carbamates, pyrethroids) on their farms. One participating grower mentioned, “This is the first time that I didn’t spray my cantaloupes in June and yet they still look great.”

Although the reduction in the number of pesticide applications reduced pesticide costs, the switch from high risk pesticides to reduced risk pesticides and biocontrols was more expensive in some instances. However, IPM growers with a direct market were able to sell their produce at a premium price due to the reduction in pesticides.

At the end of the project, participants were reevaluated to determine changes in the growers’ knowledge, attitude, and practices. In general, growers felt very positive about the project and the IPM principles and techniques that were learned. When growers started in the project, they were mainly applying pesticides on a preventative basis, were rarely scouting their crops, and were using a large number of high-risk pesticides. All eight of the participating growers are regularly scouting for pests. The frequency depends on the growing cycle, weather conditions and variety. Usually it is a minimum of twice a week. By scouting on a more regular basis and utilizing key management practices such as pest and beneficial organism identification, knowledge of pest life cycles, and monitoring of weather conditions to determine when and what tools to utilize in managing pests. They are not applying any high-risk pesticides and are not applying pesticides preventatively.

Eight growers in Lancaster County benefited directly from on-farm educational sessions due to this project. In addition, approximately 95 growers gained knowledge of the project and the benefits from an IPM program at four grower's meetings and workshops.

Educational workshops and meetings were held both locally and region-wide to facilitate further learning of growers and to promote this project. An all-day workshop was developed and delivered for the Pennsylvania Association for Sustainable Agriculture's annual conference in February 2009 looking at the use of IPM and biological controls to manage vegetable pests. Twenty growers from across the mid-Atlantic region attended this event.

Three other seminars on IPM, beneficial organisms, and the relationship between soil health and pest management were presented by Wade Esbenshade at local grower's meeting at a farm in Leola, PA in July of 2008, at Pennsylvania Certified Organic's annual meeting in December of 2008 and at a local grower's meeting in March of 2009 in New Holland, PA. Both of these events had 67 growers attend. An informational presentation was given regarding the Pennsylvania IPM Program at the Entomological Society of Pennsylvania's annual meeting in October of 2009.

It is difficult to access the impact of this project on the greater farming community of Lancaster County. As far as the participating growers, "On average, growers in the "IPM" group were able to eliminate one to two pesticide applications per crop and were able to eliminate all restricted-use pesticides and FQPA priority pesticides (e.g. organophosphates, carbamates, pyrethroids) on their farms." These farms comprised of about 150 acres.

Through past experience with working with the Amish and Mennonite communities, we would expect the project's impact to be much larger than just the participating growers. The spread of information through word of mouth is also evident in the fact that we get approximately ten to twenty calls each year from growers who would like to be involved in projects similar to this one. We also plan on continuing to use knowledge and information gained from this project at local grower meetings and in future projects in Lancaster County.

### **Beneficiaries:**

Eight growers in Lancaster County benefited directly from on-farm educational sessions due to this project. In addition, approximately 95 growers gained knowledge of the project and the benefits from an IPM program at four grower's meetings and workshops. Knowledge gained from this project will also be used to improve an IPM field guide that is currently being developed by project associates. First-hand experiences from project participants will be incorporated into the guide.

**Lessons Learned:**

Growers are anxious to learn more about using IPM and bio-controls to manage pests on their farms. Most growers were very willing to learn and try new things. The biggest challenge to the project was getting growers to keep accurate pesticide records from year to year. Even after receiving pesticide record books from the project and receiving friendly reminders to keep them up to date, some growers still struggled to complete them.

It was also discovered to be a challenge for growers who sell at the local produce auctions to adopt new IPM practices for fear of having increased pest damage to their crops. Buyers at the auctions tend to demand perfect produce and generally do not care if growers use a high amount of pesticides to achieve that quality. More consumer education is needed on the value and benefits from produce grown using IPM techniques.

**Contact Person:**

Cathy Thomas,  
IPM Coordinator,  
PA Dept. of Agriculture  
2301 North Cameron Street  
Harrisburg, PA 17110  
717-772-5204  
[caththomas@state.pa.us](mailto:caththomas@state.pa.us)

**Project #4****Project Title:**

Produce Auction Price Reporting

**Project Summary:**

The web based auction price reporting system was conceived to enhance the competitiveness of Pennsylvania's specialty crop industry. To provide timely information pertaining to the sale prices occurring at state produce auctions. Currently in Pennsylvania there are 14 active produce auctions. These facilities are usually managed and operated by a church related member association. Each auction operates similarly: sellers obtain a "seller's number"; they place their produce in lots (ie. 6 flats of strawberries equals a lot). A buyer obtains a "buyer's number". The auctioneer will sell the lots to the highest bidder. The price of product can have wide swings dependent primarily on supply volumes, number of buyers and product quality.

The advisory board recommended this project to enhance the decision making information of both sides of the exchange.

As a result of this project an active web link on the Department's webpage was created on the Department's site [www.agriculture.state.pa.us](http://www.agriculture.state.pa.us) (e-services) as well as a produce hot line was established for producers, and consumer to call for updated weekly numbers phone summary report accessible at (717-100-0879). The link is updated weekly during the produce auction season from information supplied by participating auctions. The produce season in Pennsylvania is primarily June through November.

### **Project Approach:**

The Auction reporting system was successful in 2009 in piloting the project concept with two produce auctions. The auction managers submitted weekly sales numbers on the provided sales tracking and reporting sheet. The weekly sales results were tabulated and published on the state web page under our new e-services report category. The weekly produce price report is modeled after our livestock auction reporting system. In –addition to posting weekly sales number on the state web page.

Information was also recorded and updated weekly on the Produce hotline. The Department of Agriculture's information technology division tracked 177,000 hits to the market summary page between March, 2009 and January, 2010. The market summary page directs user's to either produce market summary or livestock market reports. Assuming that the number of page visits to the produce summary is 5%, the page would be visited 221 times a week. At this time we do not have a definitive number for the percent of farm market operators utilizing the information. Farm Market operators receive information regarding the service availability and are encouraged to check the site for current produce prices.

The reporting system provides needed information to both the buyers and sellers on the sale price and estimated volume of produce moving through the state produce auctions. This new information resource is beneficial to stakeholders, who include: produce growers, auctions, buyers and wholesalers.

### **Project Goals and Outcomes Achieved:**

Although the project members were active in making auction visits and sharing the information source with stakeholders; only a portion of the overall final project goals were achieved. The project did accomplish the establishment of a mechanism for reporting produce auction prices on line as well as a produce hot line. These 2 additional sources for produce prices provide interested parties with more timely information than a week old produce sale report reprinted in industry trade newspapers. This is important to produce sellers who need to make market decisions on whether the auction will be an economically rewarding outlet to sell product or if they need to find another outlet. And for buyers it provides a more realistic estimate of what to expect to pay for purchasing wholesale produce.

The project goals that were not reached included tracking of all produce auctions. Only three auctions reported results consistently. The project planned on having livestock marketing and grading division staff members assist with data collection at the produce auctions. This did not occur because of staff reduction as a result of the budget shortfall (original staff of 8 reduced to 3). Secondly, outreach materials were not developed in accordance to the proposed project due to reduced staff. Information was provided to extension educators that work with produce auctions to share with buyers and sellers at produce auctions, as well as, information was disseminated by the remaining livestock auction reporters. Weekly payments to produce auctions as an incentive to participate did not occur due to internal process constraints and church related ownership of produce auctions not interested in accepting incentive checks from department of agriculture.

**Beneficiaries:**

The intended beneficiaries are the produce sellers and buyers. The concept of having more 'real' time data accessible to a produce seller provided more information to better determine the anticipated value of a product being sold at a produce auction. The benefit to the seller was having a 'real' time price range for anticipating cost of product. The project would then ultimately provide more economic benefits to the seller and buyer as well as the produce auction.

**Lessons Learned:**

The project concept is based upon market place need, however, the project development and implementation was impaired primarily due to unforeseen staff positions eliminated due to Commonwealth furloughs and internal staff changes. Staff involvement with the Department of Agriculture's information technology bureau was beneficial in developing a better process, data entry and reporting system.

This will enable the Bureau of markets to continue to provide weekly report information going forward. It is believed that this project could be successful in the future if it was also to include the Pennsylvania Vegetable Growers and Vegetable Marketing and Research Boards for grower and produce auction support and insight into how we can continue this service.

**Contact Person:**

Lela Reichart,  
Pennsylvania Department of Agriculture  
2301 North Cameron Street, Room 310  
Harrisburg, PA 17110  
717-783-1394  
[lreichart@state.pa.us](mailto:lreichart@state.pa.us)